Diabetes 101

DIABETES EDUCATION AND CAMPING ASSOCIATION

"Bringing Our World Together"

A handbook for camp directors, coaches, teachers, nurses and others who have children with diabetes in their care

www.diabetescamps.org

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The Diabetes Education and Camping Association (DECA) was established in 1997 to help diabetes camps and others who care for children and families with diabetes in their lives. DECA helps to strengthen and expand programs by offering education and sharing resources. DECA has members from around the world who are doctors, nurses, nutritionists, mental health professionals and diabetes industry representatives. These individuals give their expertise to ensure programs continue to give children with diabetes and their families a place to find education, shared experiences and the motivation to live well with diabetes.

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Preface

Being a camp staff member, teacher, coach or day care provider is a job to love. Most of us work with children because we want to shape their development so that they will be happy, healthy and well-adjusted. Each day we have the opportunity to teach, mentor and build their self-esteem. Creative, exciting programs that bring children together with their peers are the best way to teach new skills and enhance the child's ability to work within a group. Every child should have the same opportunities. And, of course, ensuring a safe environment is critical for success.

It can be challenging, even scary, to have a child with diabetes in your camp, program or school. If you don't deal with diabetes frequently, it can be overwhelming to think about your "regular" job broadened to encompass what would ordinarily be defined as "nursing" or "parenting" skills. Insulin, food, exercise, high and low blood glucose, symptoms, special medical devices… YIKES!

The Diabetes Education and Camping Association is committed to helping you. Our goal is to provide leadership and education to advance organizations that help children with diabetes and their families. Ultimately, we hope that every child with diabetes can participate in any activity they choose so that they feel "normal" and happy just like their peers without diabetes.

With a grant from The Wellmark Foundation and Abbott Diabetes Care Inc., we have produced this introductory booklet and hope that it will help you be successful and comfortable when a child with diabetes is in your program. Good luck! We stand ready to assist you should you need us.

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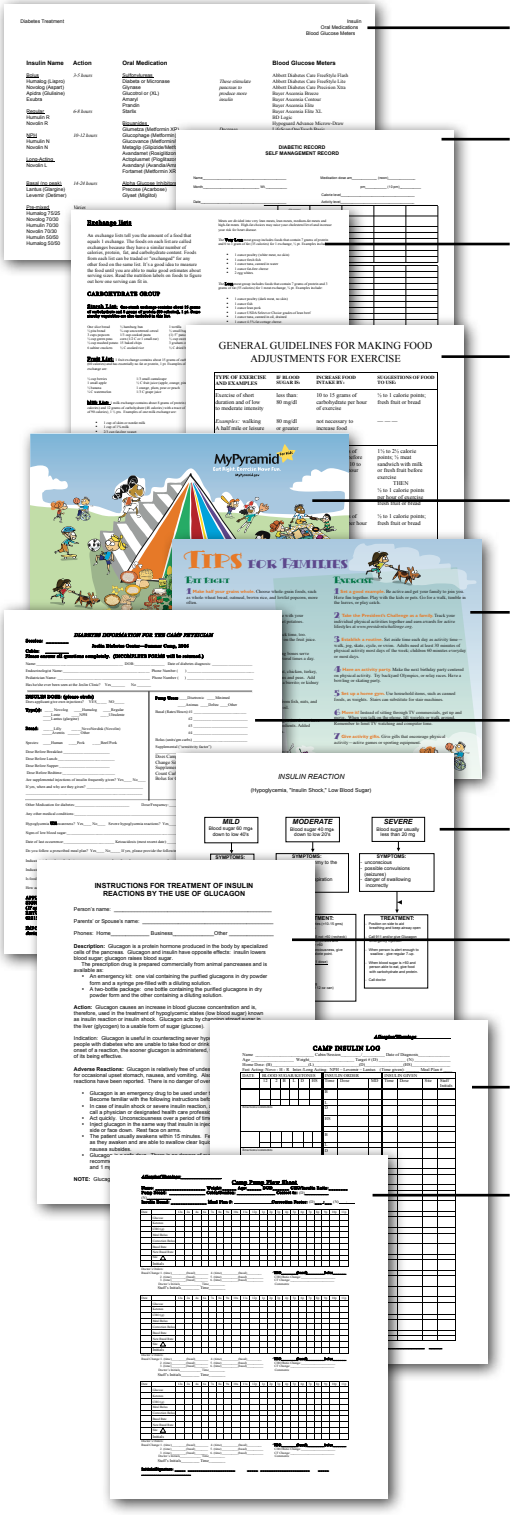
Appendices



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What Is Diabetes?

Diabetes is a chronic condition that has no cure. One in 500–600 children has type 1 diabetes. These children require insulin injections daily to survive. Type 2 diabetes in children, which until recently affected primarily adults, has been deemed "an epidemic." Children with type 2 diabetes must improve food intake, increase exercise and may also require oral diabetes medications or insulin. Both types of diabetes may have devastating effects on the current and long-term health of children.

Uncontrolled diabetes has immediate health consequences, and long-term complications affecting the eyes, vascular system, heart and kidneys are not uncommon. This makes it essential for everyone in a child's life to be knowledgeable and ready to support healthy diabetes management.

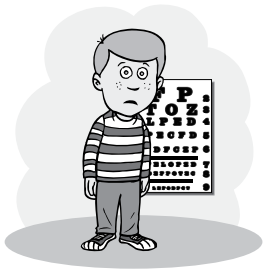
Diabetes results from the body's inability to secret or produce an adequate amount of a hormone called insulin. Insulin is produced by the beta cells in the pancreas and acts like a "key" that opens up the body's cell "doors" to allow glucose to enter. The foods that we eat, especially carbohydrates, are converted to glucose. Without insulin, the body's cells cannot be nourished because the glucose cannot be used for energy and cell repair. When this happens, the glucose builds up in the bloodstream causing symptoms including:

Excessive Thirst

Frequent Urination

Extreme Hunger

Unusual Weight Loss



Blurry Vision

Fatigue

Irritability

In type 1 diabetes, pancreatic beta cells have been destroyed by an autoimmune process, eliminating the production of insulin forever. At present, there is no known cause for this process and it occurs quite quickly.

Many children with type 1 diabetes present to the doctor with serious "flu-like symptoms." Their blood glucose may be extremely high and hospitalization is required to stabilize blood glucose. When a child has very high blood glucose levels the body's cells are not being nourished. The body begins to burn fat for energy. The by-products of this process are "ketones," which can be traced through the urine and the blood. This is a serious condition which, if not addressed medically, may cause coma and, in rare occasions, death. We will address ketone management later.

In type 2 diabetes, which is associated with childhood obesity, the body is not able to use insulin to regulate blood glucose. Children could have type 2 diabetes and not know it because they have mildly elevated blood glucose levels that may not cause dramatic symptoms. Even elevated blood glucose levels with no apparent symptoms have a profoundly negative effect on the body. We do not know how many obese children have type 2 diabetes but there is a push to have children screened for the condition. Keeping a child's weight in a healthy range is the best prevention for type 2 diabetes.

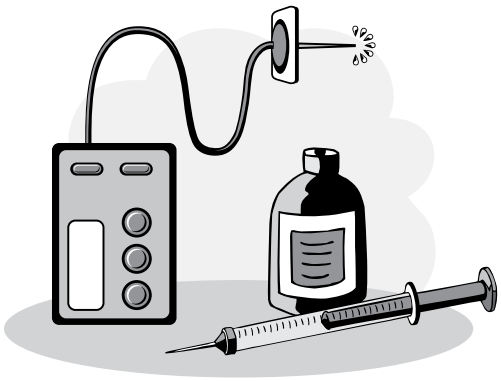
Both types of diabetes present a challenge when children are away from parents. Maintaining blood glucose levels in a safely tolerated, normal range is the key to a child's immediate and long-term health. It requires monitoring of blood glucose, administration and adjustment of medication, meal planning and daily exercise. A child must have support from parents and other adults in order to handle the complexities of their daily diabetes management routine. No child should have to manage their diabetes without adult supervision and support.

Diabetes Management Routines

The key to successful diabetes management is to match food and exercise with prescribed medication in order to maintain normal blood glucose levels. In this way, a child with diabetes may participate in any activity they wish.

Type 1 Diabetes

Type 1 diabetes is treated with synthetically made insulin. A child with diabetes must have a constant amount of long-acting insulin (called "basal") 24 hours a day, combined with a burst of fast-acting insulin (called "bolus") to cover either food or a sudden release of stored glucose. Insulin is available by injection, through the use of syringes or pens, or through delivery via an insulin pump.

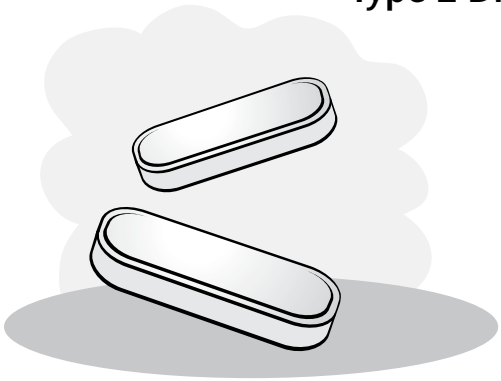


A majority of children with type 1 diabetes choose one of the following two insulin regimens:

1. injecting a long-acting insulin (basal) once or twice daily, combined with injections of fast-acting insulin (bolus) before or immediately after meals ***or***
2. delivering via an insulin pump, which administers insulin according to a preprogrammed 24-hour schedule (basal) with additional fast acting insulin (through a bolus button) administered for meals, snacks and to regulate high blood sugars.

It is likely that a child, with type 1 diabetes, in your care for more than a few hours will need blood glucose monitoring, food and insulin.

Type 2 Diabetes



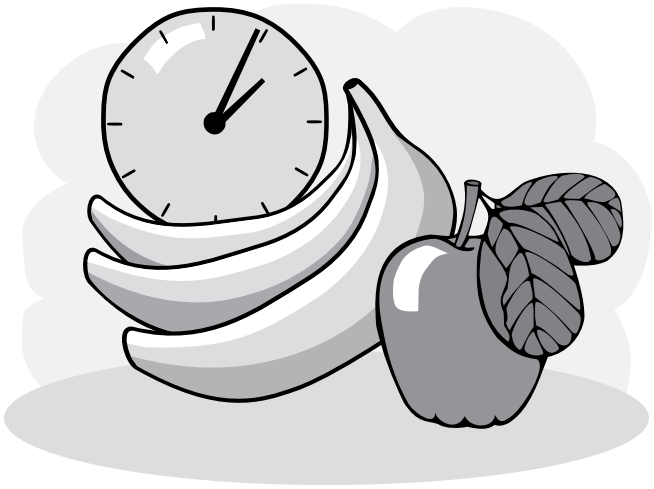
Type 2 diabetes in children may be managed with meal planning, regular exercise and sometimes medication, often an oral medicine, rather than insulin. Some children with type 2 diabetes must use insulin.

See Appendix, Chart A (page 25): Chart of various insulins, type 2 medications and blood glucose meters

See Appendix, Chart B (page 26): Self management diabetes record

Meal Planning

Meal planning is important so that food can be matched to doses of insulin or other diabetes medications. Children with diabetes need to have enough calories to provide energy for play and growth. If they are hungry or more active they need more to eat. Insulin may be adjusted on a meal-to-meal basis to allow a child with diabetes to be flexible. Healthy eating is very important.



The overall goal of meal planning is to include meals and snacks that enhance energy, growth and development. You will see how tricky that can be when a child has diabetes. The balance of insulin and food with activity is not an exact science. That is why blood glucose levels fluctuate widely in children with diabetes. It is important to minimize extreme fluctuations in routine by eating at the same time each day, and spacing food throughout the day. This helps to reduce high and low blood glucose. Some children with diabetes eat three meals and three snacks daily. This may be different than the meal plans that are typically used. Arrangements may need to be made for additional snacks when you have a child with diabetes in your program. Children participating in strenuous activities will certainly need fast acting snacks like juice or glucose tabs and a longer lasting food source such as peanut butter crackers. A belt pack with diabetes supplies including fast-acting carbohydrates, long-lasting food sources and blood glucose monitoring supplies should always be with you.

The food we eat is made up of carbohydrates, protein, and fat. Good nutrition includes healthy choices of these three types of food, plus plenty of water, vitamins and minerals. Carbohydrates have the most significant effect on blood glucose. All carbohydrates and about 58% of proteins are converted into glucose. The amount of food and the concentration of carbohydrate determine how the blood glucose level rises. In other words, the same meal but with a different total calorie count (or larger portion), will require different amounts of insulin. Even when meals are carefully planned and the “right” amount of insulin is given, blood glucose readings can vary. With rapid acting insulin, it is easier to get the insulin “peak” to match the food “peak” but it is not a perfect process. Also, many factors other than just food and insulin can have an effect on blood glucose – like hormonal activity and stress.

Nowadays, the emphasis in meal planning for kids with diabetes is to eat healthy amounts of healthy foods that are kid-friendly. The child's health care team may suggest a total calorie meal plan broken into healthy amounts of carbohydrate, protein, fat, vegetable and milk. It is essential that we teach children meal plans based on appropriate total daily intake of calories, whether a child has type 1 or type 2 diabetes.

With that as a guide, the child can decide how to choose foods (and amounts of each) to fit into their total calorie meal plan. As is true for everyone, minimizing "unhealthy" fats is important to reduce future vascular complications. Sweets should be eaten in moderation because most represent calories empty of nourishment and are absorbed rapidly. Many children with type 1 diabetes do not follow a "meal plan," per se. Calories may need to be increased for growth for this group of children. However, kids with type 2 diabetes may follow slightly more restrictive meal plans. The important thing to remember is consistent amounts at consistent times and a well-balanced, nourishing meal plan.

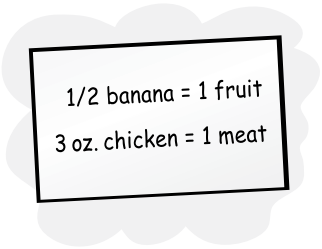
Ways To Balance Food With Insulin And Exercise

In order to balance food with insulin and exercise, the amount of carbohydrate is calculated, along with average daily caloric intake, in order to determine a matching amount of insulin. A nutritionist or diabetes educator will help to establish the meal plan based on the child's age, weight needs and activity level. On a daily basis, the child may be able to calculate meal intake alone, or they may need assistance. Forecasting exercise is also an important part of this equation.

Carbohydrate Counting

This method (most common) involves calculating the number of grams of carbohydrate in each food group on the plate (or in the glass) and matching an insulin dose (which may be increased for no activity or decreased for major activity) to it. For instance, a typical "insulin-to-carb ratio" might be 1 - 10 (1 unit of insulin for each 10 grams of carbohydrate). That means that for every ten grams of carbohydrate eaten, the child must take 1 unit of fast-acting insulin. It is important to remember that foods other than bread, pasta, rice, cakes and cookies have carbohydrate. An 8 ounce glass of milk has 12 grams of carbohydrate. Vegetables and fruits are carbohydrate, as well.

Diabetes Exchanges



The exchange system uses groupings of meat, vegetable, fat, breads/grains (starches), fruits and milk. The serving size of each type of food is used within a total daily calorie system. For example, ½ banana = 1 fruit exchange (15 grams carbohydrate) or 3 ounces of chicken = 1 meat exchange (27 grams protein, or 3 times 7 grams of protein in 1 ounce of meat). Children using this approach will typically have their meal plan with them as a guide. The meal plan would indicate, for instance, that for breakfast, the child would have 2 breads, 1 fruit, 1–2 proteins, 1 fat, 1 milk. Within that plan, they can make individual choices.

Calorie Counting

Calorie Counting (using a point system) is based on the amount of calories related to total intake per meal and snack. These are recommended to be similar for each meal and snack unless activity demands more or the child needs more

for healthy development. This system is helpful because foods are now labeled with nutritional information, including total calories per serving.

Calorie points are obtained by dividing 75 into the total calories of a product. These Calorie Points are totaled for each meal and snack. Some examples of a Calorie Point are one Calorie Point for a standard slice of bread, an ounce of medium fat meat, a medium sized fruit, ½ cup of a more compact vegetable such as potatoes, rice and pasta, or a glass of skim milk. ½ Calorie Point is given to less compact vegetables such as green beans or a teaspoon of butter or margarine.

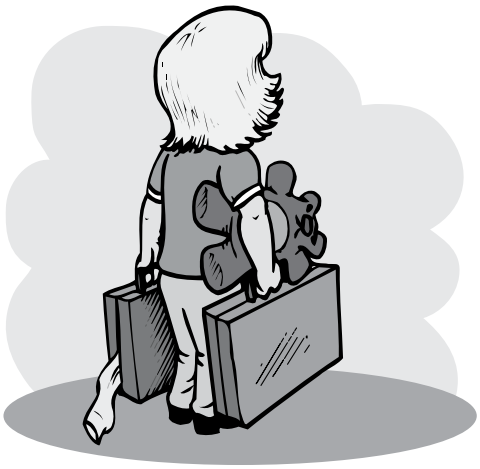
See Appendix, Chart C (page 27): Chart of food exchange list

See Appendix, Chart D (page 28): Chart for general guidelines for making food adjustments for exercise

See Appendix, Chart E (page 29): Food pyramid

See Appendix, Chart F (page 30): Food/exercise tips for families

Managing Diabetes Away From Home



The parents of a child with diabetes and the child, him or herself, are your best allies in the challenge. It is essential that you create a special intake form that you will have the parents fill out that gathers critical information. (Appendix, Chart G, page 31)

You must be prepared to take on the task of the child's diabetes management. We strongly recommend that all programs have a nurse on site or available, but we understand that in some cases a nurse might not be available at all times.

These are the basic tasks with which you must be comfortable:

- Check blood glucose levels
- Plan meals and calculate total carbohydrates
- Adjust dose and administer insulin
- Recognize symptoms of low and high blood glucose
- Treat symptoms of low and high blood glucose
- Check for ketones if blood glucose is over 240 mg/dL and treat, if present (usually requires more insulin)
- Change an infusion set and fill a cartridge reservoir for insulin pump users, if the child is in your care for multiple days
- Know when to ask for medical assistance

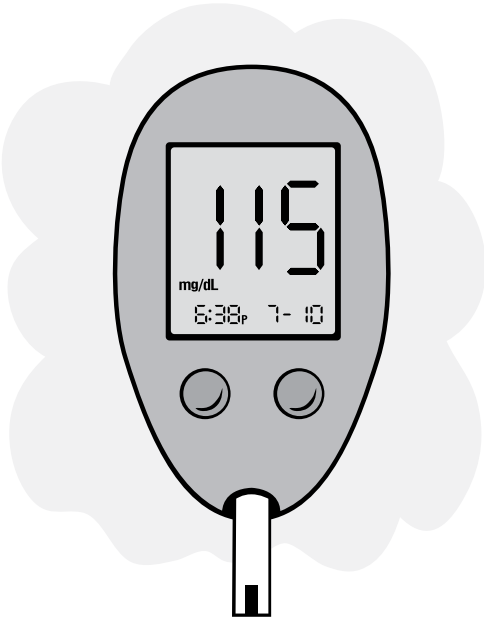
Check Blood Glucose Levels

Knowing a child's blood glucose is the single most important tool for healthy management of diabetes. A normal blood glucose for a person without diabetes is 70–110. Ideally, a child's blood glucose levels will be maintained in a near normal range of 80–160 when he/she is away from home; however, this range should be discussed with the parents. Keep in mind that a child with diabetes will undoubtedly experience blood glucose levels outside of this range. This is not necessarily because the staff or the child did anything wrong. Parents

should indicate when and how to address blood glucose that are out-of-range, either by adjusting insulin(up or down) to correct a blood glucose, changing exercise or eating patterns, etc.

Typical blood glucose monitoring times for children with type 1 diabetes are:

- First thing in morning, before breakfast
- Before each subsequent meal and 2 hours after
- Before bed
- Any time symptoms are present (witnessed or when child tells you he/she is feeling something)
- Every 15 minutes until blood glucose rises during low blood glucose (hypoglycemic) event
- After 60 minutes after low blood glucose is in normal range
- Two hours after pump site change (to ensure pump is functioning)
- Before and after strenuous activity
- During the night (2–3 AM) if blood glucose before bed is under 100



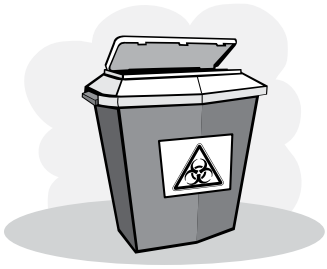
Children with type 2 diabetes may not check blood glucose as often. Please consult parents and health care provider for recommended times.

Do not be alarmed when a child's blood glucose is out of range on the high side. This could be an isolated occurrence and does not necessarily need immediate attention, unless ketones are present. However, whenever blood glucose is on the low side of the range, immediate attention is needed in the form of a fast-acting carbohydrate. Low blood glucose is an emergency situation because it can continue to drop, resulting in unconsciousness and potential seizure.

Goal: To ensure that blood glucose is checked regularly in a safe, accurate manner and to gather information to allow for adjustments in insulin, food and exercise.

1. Have parent teach you how to use blood glucose meter (**Appendix, Chart A**, page 25)
2. Review manufacturer's procedure recommendation (keep booklet on hand)

3. Typically, meter is turned on and check strip inserted prior to initiating blood glucose check
4. Make sure site is clean (wash, rinse with warm water and dry if possible. If alcohol swab is used, allow skin to dry thoroughly before piercing.)
5. Use lancing device provided by parents or have parents provide several single-use, self-retracting lancets to minimize cross-contamination
6. Encourage child to lance own site, drawing small drop of blood (sides of pads of fingers are most common site; other sites are the fatty heel of the hand and the inner aspect of the arm. If hypoglycemic, the palm or fingers are to be used).
7. Place blood on strip following meter recommendations (in newer meters, the blood is actually sucked into the strip by maneuvering the strip to the drop of blood, rather than the child dropping the blood from the finger onto the strip)



8. Wait for blood glucose result (repeat if error message is received, starting from beginning)
9. Discard lancet, strip and any tissues or contaminated materials in approved biohazard container or "sharps container." (ask parents to provide this if you do not have this on site)
10. Write blood glucose result in blood glucose log (**Appendix, Chart B**, page 26)

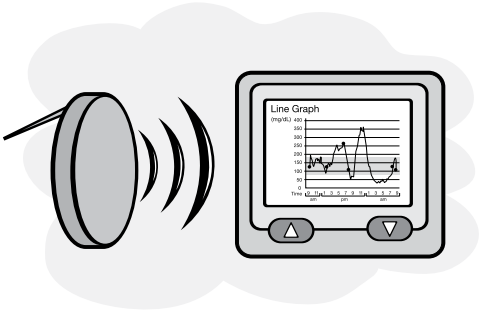
See Appendix, Chart G (page 31): Diabetes information for the camp physician

See Appendix, Chart A (page 25): Listing of blood glucose meters

See Appendix, Chart B (page 26): Self management record

Continuous Glucose Monitoring

A new innovation in technology is changing the way people with diabetes measure their glucose levels and manage their condition. Continuous Glucose Monitoring (CGM) systems measure glucose levels frequently – up to once every minute. An alarm sounds notifying the user if levels are too high or too low. "Real time" monitoring identifies trends quickly. With CGM, the individual can see at a glance where insulin levels have been and where they are currently. Some brands also enable the wearer to anticipate when glucose levels will rise or fall.



CGM devices include three parts: a disposable sensor, a transmitter and a receiver. A disposable sensor attaches to a transmitter and sends information wirelessly to the receiver. The sensor-transmitter unit attaches with adhesive to the body, typically to the arm or abdomen. The sensor is the size of a monofilament (similar to a small piece of fishing line), and is inserted under the skin to enable readings. The wireless receiver is carried separately. For example, it can be worn on the belt. Glucose is measured once every 1 to 5 minutes, depending on the brand, and results are transmitted to the receiver.

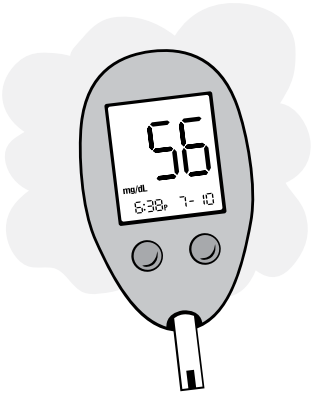
CGM is designed to significantly reduce time spent in hypo- and hyperglycemia. Some devices use arrow graphics to show high or low trends. With this trend information, the child with diabetes can prevent a low blood glucose reaction before it happens. Similarly, if glucose is going up too quickly, the wearer can do something to correct it. (**See Hypoglycemia**, page 12 and **Hyperglycemia**, page 13).

Goal: To ensure that glucose is checked continuously in a safe, accurate manner and to allow for adjustments in insulin, food and exercise.

1. Have parent teach you how to use a Continuous Glucose Monitoring system.
2. Review manufacturer's procedure recommendation (keep user's manual on hand).
3. An inserted sensor can be worn for 3 to 7 days, depending on the brand. Encourage child to change more frequently if the site looks inflamed or red.
4. Make sure the site is clean (wash, rinse with warm water and dry, if possible. If alcohol swab is used, allow skin to dry thoroughly before inserting.)
5. Before making a diabetes care decision, always confirm the result from the CGM receiver by doing a finger-stick blood glucose test, using a blood glucose meter.

Hypoglycemia (Low Blood Glucose)

Goal: To treat low blood glucose quickly and accurately so that child's blood glucose returns to normal range, allowing child to resume activity



A child's blood glucose can be lower than the normal range for many reasons. Basically, low blood glucose occurs when there is too much insulin and not enough glucose. It can be caused by increased or unexpected exercise, the fact that a child missed a snack or did not eat an entire meal or missed a snack for which an insulin dose had been given, or a slight disproportionate (too much) dose of insulin being calculated. Sometimes, we don't know the reason why the blood glucose is low.

When blood glucose levels are low there is a risk to the child. The brain is not being nourished with glucose and disorientation and more severe symptoms can develop quickly. Symptoms can be mild, moderate or severe. ("Ways To Treat Low Blood Glucose" can be found in the **Appendix, Chart H**, page 32).

Never force food into the mouth of a child who cannot swallow. If the child is losing consciousness, the administration of glucagon may be required. Glucagon is not a sugar. Rather, it is a pancreatic hormone that triggers the release of stored glycogen from the liver and helps convert it into glucose. Side effects of glucagon include nausea, vomiting and general malaise that may last through the following day. (Refer to **Appendix, Chart I**, page 33, for instructions on treatment of insulin reactions by the use of glucagon).

Having foods available and with you (not ½ mile away on a different field or in a different building) is essential. An adult must be with the child who has diabetes at all times, equipped with low blood glucose treatment supplies, to ensure the child's safety.

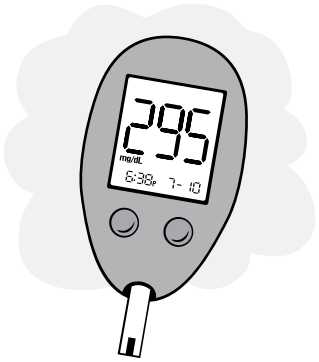
Over-treating hypoglycemia is not a terrible thing, but under-treating can be. Remain calm but be assertive in your plan and check the child's blood glucose every 15 minutes until the result is over 70 mg/dL. It takes 15 minutes for a food source to begin to stabilize blood glucose. Remember to write down the blood glucose readings and what the child ate for future reference. It will help with insulin calculations the next time!

See Appendix, Chart H, (page 32): Insulin reaction

See Appendix, Chart I, page 33): Instruction for use of glucagon

Hyperglycemia (High Blood Glucose)

Goal: To treat high blood glucose so that camper's blood glucose returns to normal range, preventing development of ketones and, in the extreme, ketosis (high blood sugars and ketones) or ketoacidosis (high blood sugars, ketones and chemical imbalance), and allowing child to fully participate in all activities



A child's blood glucose can be higher than normal for many reasons. Basically, high blood glucose occurs when there is too little insulin for the amount of glucose in the body. **Possible causes for this could be:**

- Child eating more food than planned
- Taking too little insulin
- Experiencing stress or illness
- Not participating in planned physical activity (rainy days are a common cause)
- Becoming dehydrated (hydrating child with 8–16 ounces of water or sugar free drink in 30–60 minutes and rechecking blood glucose may avoid need for other measures)
- Having an infection

Unlike low blood glucose, which has a risk of immediate consequences, high blood glucose can be addressed in many ways. More often than not, a "wait and see" approach can be taken, especially when blood glucose levels are between 140 – 240, or when no ketones are present. If blood glucose is over 240, checking for ketones is important. If ketone check (by blood check or urine check – get strips from parents) indicates ketones are "trace to small," the child should drink a minimum of 8–16 ounces of water and should refrain from strenuous activity until the ketones are eliminated. Insulin may be required when ketones are "trace to large," and the blood sugars are over 240 mg/dL, or when the parent has indicated specific instructions (a "correction factor" or via an "algorithm" or "sliding scale", a charted recommendation of how much insulin to take based on the child's blood glucose–if used, watch out for and report rebounds or "roller coaster effect"). Persistent high blood glucose levels are of concern and a contact to the parent should be made if 3 consecutive blood glucose readings are over 240 mg/dL.

Insulin Administration

Goal: To ensure that the child with diabetes receives the correct dose of insulin for their planned food and exercise and that the site of the insulin administration is in good condition

The child with type 1 diabetes requires insulin in order to survive. They do not and will never produce insulin themselves. Currently, the only recommended insulin must be taken by injection or through continuous infusion (an insulin pump). An increasing number of children use insulin pumps. An understanding of dosing and administration is essential.

Children with type 2 diabetes maybe need insulin or a specific oral agent (pill) to maintain blood sugar control.

There are many different kinds of insulin (**Appendix, Chart A**, page 25). Children on injections take multiple kinds of insulin, ranging from fast- to moderate-, to long-acting. Each of these insulins has a different peak which is intended to be matched to times when blood glucose levels are highest and activities are lowest. There is no way to cover all of the variations of insulin and dosing in this manual. It is imperative that the child's family gives you written instructions on insulin dosages, both bolus and basal, including calculations for insulin-to-carbohydrate ratios, sensitivity (correction) factors, sliding scales or algorithms (a chart of insulin to give for blood sugar control), or other methods for insulin adjustment.

Extra bottles of insulin should be kept refrigerated, except for the bottle in use or the digital insulin "pen." It is fine to keep insulin at temperature ranges between 40 and 80 degrees Fahrenheit. Never leave insulin or blood glucose monitoring strips in a car or place where temperatures might exceed 80 degrees Fahrenheit.

Syringes for giving insulin injections come in different sizes, usually 30 (one of the BD 3/10 syringes that has ½ unit markings), 50 or 100 units. Each major mark on most syringes is equal to 1 unit of insulin, except for 100 unit syringes where each mark equals 2 units. Depending on the types of insulin taken by the child, one-to-two shots per administration may be needed because some types of insulin (rapid and long acting insulins that have different pH levels) cannot be mixed together. Outside of the home setting, syringes should only be used once. Used syringes must be disposed of in a biohazard container.

See Appendix, Chart A (page 25): Chart of various insulins, type 2 medications and blood glucose meters

Drawing Up Insulin

A designated person should be trained to administer insulin. The following is a typical procedure but procedures vary from child-to-child. It is imperative to go through the insulin administration procedure with the child's parent.

Procedure For Single Dose (One Type Of Insulin)

Many children take an injection of fast-acting insulin before each meal, along with a long-acting insulin that has no peak. This works very well for children because the combination provides a "basal" insulin which is combined with the fast-acting, bolus insulin. This regime is similar to an insulin pump and is preferred in many cases since pump management can be complicated. At this time, long-acting insulin cannot be mixed with fast-acting insulin in the same syringe. In these cases, there is no mixing of insulin since each injection is given separately.

The procedure for a single type of insulin follows:

- Make sure your hands are clean
- Mix suspension of (NPH or Novolin N) insulin by rolling bottle between hands about 20 times
- Clean tops of bottles with alcohol swab
- Replace the insulin you are about to draw up with air so that a vacuum is not created
- Put insulin bottle on table
- Hold syringe up (hold barrel of syringe in one hand and use second hand to pull plunger) and pull plunger of air to appropriate number of units of insulin
- Push needle straight down into insulin bottle, injecting the air into the air of the bottle (injecting air into liquid may create air bubbles.) Do not remove needle
- Turn insulin bottle/syringe unit so that the insulin bottle is on top and the needle on the bottom. Draw down correct number of insulin units by pulling plunger to total insulin dosage. Remove needle
- Do not allow the exposed needle to touch any surface before administering insulin
- Keep written record of dosage of each type of insulin and where given (refer to sample log in **Appendix, Chart J**, page 34)

Procedure For Mixed Dose Of Insulins – Fast- And Long- Or Intermediate- Acting

- Make sure your hands are clean
- Mix suspension of cloudy insulin by rolling bottle between hands about 20 times
- Clean tops of bottles with alcohol swab
- Replace the insulin you are about to draw up with air so that a vacuum is not created, using the cloudy insulin first
- Put insulin bottles on table
- Hold syringe up (hold barrel of syringe in one hand and use second hand to pull plunger) and pull plunger of air to appropriate number of units of cloudy insulin
- Push needle straight down into cloudy insulin bottle, injecting the air into the air of the bottle and remove needle (injecting air into liquid creates air bubbles)
- Do the same for the clear insulin by holding syringe up and pulling plunger of air down to appropriate number of units of clear insulin
- Push needle straight down into clear insulin bottle, injecting the air into the air of the bottle. Do not remove needle
- Turn insulin bottle/syringe unit so that the insulin bottle is on top and the needle on the bottom. Draw down correct number of clear insulin units by pulling plunger to total clear insulin dosage. Remove needle
- Push needle into cloudy insulin bottle (turn bottle upside down) and pull plunger down to appropriate number for the total insulin dose (many children mix three or more types of insulin)
- Remove needle
- Do not allow the exposed needle to touch any surface before administering insulin
- Keep written record of dosage of each type of insulin and where given (refer to sample log in **Appendix, Chart J**, page 34)

Note to remember: At the present time, insulin Glargine (Lantus) and Detimer (Levemir) cannot be mixed with any other type of insulin in the same syringe and must be given in separate sites.

See Appendix, Chart J, page 34: Sample Insulin Log

Administration Of Insulin Injection

- Insulin is injected into the subcutaneous, or fatty, tissue
- Choose injection site (upper arms; upper thighs; abdomen; upper, outer area of buttocks). Do not choose a site that will be intensely used for exercise soon after the injection. Clean area with alcohol swab and allow to dry. (Some children do not use alcohol to clean the injection site. This step is optional, although the area should be clean and dry before injecting.)
- Form a pinch of skin at injection site (or, on the abdomen, pinch and pull)
- Hold syringe like a pencil or dart and push needle straight into the tight skin (90 degree angle) until it stops (subcutaneous injections can be given at 90 degree angle for most people with diabetes. Young, thin or muscular individuals and pump users may inject at a 45 degree angle)
- Do not place thumb on the end of the plunger while inserting needle (this may cause premature expulsion of insulin)
- Push plunger down until it stops
- Release pinch and pull needle straight out
- Dispose of sharp in approved biohazard container
- Document dose and site of injection in child's diabetes management log (refer to sample log in **Appendix, Chart J**, page 34)

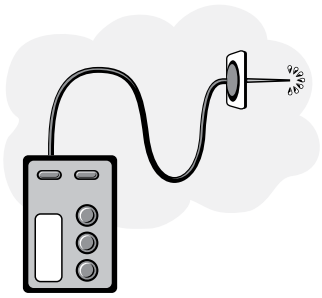
If there is bleeding at the injection site, have the child dab the area with a clean, dry cotton ball or tissue. Do not give extra insulin. Rather, document the amount you believe leaked (size of drop) and check blood glucose more frequently.

Administration Of Injection By Digital Insulin Pen

- Clean skin
- Screw needle in place
- Dial up correct units to fill needle
- Inject into skin and hold to count of five
- Remove needle
- Hold alcohol wipe at injection site for short time

See Appendix, Chart J, page 34: Sample Insulin Log

Insulin Pumps



Insulin pumps deliver rapid (fast-acting) insulin 24 hours a day (basal rate) through a catheter placed under the skin. Pumps were developed for better blood glucose control and flexibility of lifestyle. They can be very beneficial for children when they and their parents have the maturity to monitor their function routinely. Frequent blood glucose checking is critical when a child uses a pump.

Insulin pumps are programmed specifically for the child's diabetes routine and combine a set basal rate with bolus doses which are given at meals (calculated with an insulin-to-carb ratio) and correction doses to bring high blood glucose levels in range (calculated with a "sensitivity or correction factor").

Some kids use an insertion device to insert the infusion set. The infusion set is inserted with a needle, but the needle comes out and only a small tube stays under the skin. The infusion set connects to tubing, which leads to a device about the size of a beeper. Children can wear their pump on a belt buckle or in a pocket. Parents get clever with clothing when their child has a pump so that it does not interfere with normal activities. A pump may be removed for swimming or contact sports for short periods but should never stay off for more than 30 minutes without a bolus dose of insulin to "catch up" to insulin that was missed. While some pumps claim that they are waterproof, it may be advisable to remove pumps during water activities. Ask the child's parents for recommendations.

There are multiple kinds of pumps and each one is slightly different. We cannot possibly instruct you on the use of an insulin pump in this booklet. Use the parents as a resource on the insulin pump itself, the basal rates and bolus dosing, and emergency issues. Pumps are equipped with alarms to notify you of various issues. You need to know what the alarms mean and how to rectify the issue. Consider asking parents to supply you with a copy of the pump's operation manual.

Also, remember to discuss pump supplies with the parents, as they are cumbersome. Set changes (changing the site of the pump) must be done every 2–3 days. If the child will be with you for that long, you must know how to do this procedure. While the child may be able to change the set by him or herself, you should supervise to ensure everything is working properly. Also, you should always ask for syringes and insulin in case the pump malfunctions

See Appendix, Chart K, page 35: Sample Pump Flow Sheet

Emotional Adjustment

A myriad of emotions are experienced when a child, youth or parents are told of the diagnosis of diabetes. Some families take the diagnosis in stride. But for others, diabetes seems as if it is the worst possible thing that could happen. This can be especially true for those who have had a previous family member suffer complications of diabetes. In all cases, emotions may shift from time to time.

Feelings of sadness, guilt and frustration are common for the child and family even though diabetes, and the difficulties in managing it, are no one's fault. Sometimes children see diabetes as a punishment and, later on, may see high or low blood sugars as their fault. Children need to understand that they did nothing to cause diabetes. They also need to understand that blood sugars fluctuate even when a child is following their diabetes management routine. Diabetes is a condition that requires intensive intervention on a daily basis. The more educated, confident and organized a child and family are, the easier diabetes will be. Teachers, coaches, camp counselors and the child's health care team can join to provide a supportive network around the child and family.

Helping children to understand the emotions they experience and helping them balance their response to those emotions is very important. Stressful situations, because of the body's "fight or flight" response, can involve an adrenaline release, causing blood sugars to rise. Balancing a child's emotional responses to many of life's stressors – a test in school, a big game, going into a new environment, fighting with friends – can be very helpful. Problem solving techniques, cognitive behavior therapy (breathing techniques and quick relaxation exercises) are also effective.

Peer support is one of the best ways to improve a child's self worth. Camps and other programs that bring children together in a supportive, healthy environment are an important part of healthy development. But the best medicine of all is to build a network of caring people around the child with diabetes – a network that understands diabetes and can help the child make healthy decisions on a daily basis.

Preparations

Being prepared is essential when you have a child with diabetes in your care. A school might have blood glucose monitoring equipment and food to treat low blood glucose in the nurse's office. But what if the child is out on a playing field at recess? What about the camp that has one nurse attending to 100 children, who might be swimming in the lake, hiking through the woods or napping in a cabin? Most camps occupy acres of land and children can be a mile or more away from the nurse's station. What about field trips and overnights?

Packing a diabetes kit for an adult supervisor who has been trained to monitor and assist the child with diabetes is essential. Supplies can fit into a backpack, tackle box or other discreet, easy-to-carry container. It is always best to have more than you think you need since children may experience low blood glucose multiple times during the day. Problematic blood sugars can take some time to balance and multiple treatments can be needed.

Never send a child with diabetes to the nurse's office at school or nurse's station at camp alone. Low blood glucose can cause disorientation, dizziness, changes in behavior, shakiness, weakness, hunger (to name a few). An adult should accompany the child to the nurse if supplies to monitor and treat low blood glucose are not available.

Being ready before an incident occurs gives you the most opportunity to minimize the outcome. A child's low blood glucose can be treated on the soccer field and he or she can be back out playing in 15 minutes. Without readiness, the same child could be having a seizure on the way to the hospital. Make a list, pack supplies and be ready to tackle the situation with confidence.

Conclusion

Having read this book, you have more concerns than ever about having a child with diabetes in your care. Diabetes, especially type 1 diabetes, is difficult – for everyone involved. Education and team support is the best method to overcome your worries and to stay on top of diabetes management. This booklet is just one piece of a puzzle that can be solved if you work with the child, his or her parents and the child's health care team.

Knowledge is power when it comes to managing diabetes on a daily basis. Gather as much information on the child before he or she is in your care (see appendices). Ask the parents to write a 48 - hour diary so that you can follow their routine throughout the day. Remind them to send in User Manual's for blood glucose meters, pumps and other devices.

Remember, your single most important job is to know whether a child's blood glucose is in a near normal range so that you can make adjustments to medication, food and exercise. Our guidance is a start, but your comfort and competence will come once you have a child in your care.

Your reward will evolve as you realize that you enabled a child with diabetes to have a regular experience at camp, in school or on a sports team. Success is a few careful steps away. Good luck and contact us whenever you need assistance.

Appendices

The following charts, forms and other information was gleaned from the writers' resources, the Mid America Diabetes Associates, and the Elliot P. Joslin Camp for Boys. They are not intended to be complete sources. Rather, they are intended to help you develop a better understanding of diabetes and what you may need to develop for your own program.

Chart A: Insulins, Type 2 Medications And Blood Glucose Meters

Chart B: Self Management Diabetes Record

Chart C: Food Exchange List

Chart D: General Guidelines For Making Food Adjustments For Exercise

Chart E: Food Pyramid

Chart F: Food/Exercise Tips For Families

Chart G: Diabetes Information For The Camp Physician

Chart H: Insulin Reaction

Chart I: Instructions For Treatment Of Insulin Reactions By The Use Of Glucagon

Chart J: Sample Insulin Log

Chart K: Pump Flow Sheet

Insulin Name	Action
Bolus	*3-5 hours*
Humalog (Lispro)	
Novolog (Aspart)	
Apidra (Glulisine)	
Exubra	
Regular	*6-8 hours*
Humulin R	
Novolin R	
NPH	*10-12 hours*
Humulin N	
Novolin N	
Long-Acting	
Novolin L	
Basal (no peak)	*14-24 hours*
Lantus (Glargine)	
Levemir (Detimer)	
Pre-mixed	*Varies*
Humalog 75/25	
Novolog 70/30	
Humulin 70/30	
Novolin 70/30	
Humulin 50/50	
Humalog 50/50	

Oral Medication	
Sulfonylureas	*These stimulate pancreas to produce more insulin*
Diabeta or Micronase	
Glynase	
Glucotrol or (XL)	
Amaryl	
Prandin	
Starlix	
Biguanides	*Decrease hepatic glucose production*
Glumetza (Metformin XR)	
Glucophage (Metformin)	
Glucovance (Metformin/Rosiglitizone)	
Metaglip (Glipizide/Metformin)	
Avandamet (Rosiglitizone/Metformin)	
Actoplusmet (Pioglitazone/Metformin)	
Avandaryl (Avandia/Amaryl)	
Fortamet (Metformin XR)	
Alpha Glucose Inhibitors	*Slows down carbohydrate absorption in intestines*
Precose (Acarbose)	
Glyset (Miglitol)	
Thiazolidimediones	*Improve insulin sensitivity*
Actos (Pioglitazone)	
Avandia (Rosiglitazone)	

Blood Glucose Meters
Abbott Diabetes Care FreeStyle Flash
Abbott Diabetes Care FreeStyle Freedom
Abbott Diabetes Care FreeStyle Lite
Abbott Diabetes Care Optium
Abbott Diabetes Care Precision Xtra
Bayer Ascensia Breeze
Bayer Ascensia Contour
Bayer Ascensia Elite
Bayer Ascensia Elite XL
BD Logic
Hypoguard Advance Microw-Draw
LifeScan OneTouch Basic
LifeScan OneTouch SureStep
LifeScan OneTouch Ultra
LifeScan OneTouch Ultra 2
Prestige IQ
Roche Diagnostics Accucheck Active
Roche Diagnostics Accucheck Advantage
Roche Diagnostics Accucheck Aviva
Roche Diagnostics Accucheck Compact
TrackEase Smart System
True Track Smart System

DIABETIC RECORD
SELF MANAGEMENT RECORD

Name_____ Medication dose am_____ (noon)_____

Month_____ Wt._____ pm_____ (10 pm)_____

Calorie level_____

Date_____ Activity level_____

Urine Ketones

(N) (S) (M) (L)

Time	Glucose/ Ketones				
Fasting					
after breakfast					
before lunch					
after lunch					
before supper					
after supper					

BLOOD GLUCOSE

>400—					
380—					
340—					
300—					
260—					
240—					
220—					
200—					
180—					
160—					
140—					
120—					
100—					
80 —					
60 —					
40 —					
20 —					

Time					
Changes					
Diet					
Insulin					
Reactions					
Activity					
Remarks					

Key

Diet changes/time
+1 = 1 point (or 1 carb) food extra
- 1 = 1 point (or 1 carb) food less

Activity
↑ increased activity
↓ decreased activity

Reaction / Illness
M - mild
Mo - moderate
S - severe

Exchange lists

An exchange lists tell you the amount of a food that equals 1 exchange. The foods on each list are called exchanges because they have a similar number of calories, protein, fat, and carbohydrate content. Foods from each list can be traded or "exchanged" for any other food on the same list. It's a good idea to measure the food until you are able to make good estimates about serving sizes. Read the nutrition labels on foods to figure out how one serving can fit in.

CARBOHYDRATE GROUP

Starch List: **One starch exchange contains about 15 grams of carbohydrate and 3 grams of protein (80 calories), 1 pt. Some starchy vegetables are also included in this list.**

One slice bread	½ hamburg bun	1 tortilla
½ pita bread	¾ cup unsweetened cereal	½ small bagel
3 cups popcorn	1/3 cup cooked pasta	(1) 5" pancake
½ cup green peas	corn (1/2 C or 1 small ear)	½ cup sweet potato
½ cup mashed potato	15 baked chips	3 graham crackers
6 saltine crackers	½ C cooked rice	½ C dried beans

Fruit List: 1 fruit exchange contains about 15 grams of carbohydrate (60 calories) and has essentially no fat or protein, 1 pt. Examples of one fruit exchange are:

½ cup berries	1/3 small cantaloupe
1 small apple	½ C fruit juice (apple, orange, pineapple)
½ banana	1 orange, plum, pear or peach
¼ C watermelon	1/3 C grape juice

Milk List: 1 milk exchange contains about 8 grams of protein (32 calories) and 12 grams of carbohydrate (48 calories) with a trace of fat (a total of 90 calories), 1 ½ pts. Examples of one milk exchange are:

- 1 cup of skim or nonfat milk
- 1 cup of 1% milk
- 2/3 cup fat-free yogurt
- 3/4 cup of yogurt from 2% milk (also includes 1 fat exchange)
- 1 cup 2% milk (also includes one fat exchange).

Vegetable List: One-half cup of most vegetables (cooked or raw) has about 5 grams of carbohydrate and 2 grams of protein (25 calories) and is considered 1 exchange. Raw lettuce may be eaten in larger quantities, but regular salad dressing usually equals 1 fat exchange, ½ pt. Some vegetables are higher in carbohydrate and are counted as 1 starch exchange (see starch list above).

Other Carbohydrates List: One "other carbohydrate" exchange has 15 grams of carbohydrate. Many of these foods count as a carbohydrate (carb) exchange and one or more fat exchanges.

- 1 brownie (2 inch square) = 1 carb exchange, 1 fat exchange, 1 ½ pts.
- 2 small cookies = 1 carb, 1 fat exchange, 1 ½ pts.
- 1 granola bar = 1 1/2 carb exchange, 2 pts.
- 1/2 cup ice cream = 1 carb, 2 fat exchanges, 2 pts.
- 1/3 cup frozen yogurt, low-fat = 1 carb exchange, 1 pt.

Meat and Meat Substitute Group

Meats are divided into very lean meats, lean meats, medium-fat meats and high-fat meats. High-fat choices may raise your cholesterol level and increase your risk for heart disease.

The **Very Lean** meat group includes foods that contain 7 grams of protein and 0 to 1 gram of fat (35 calories) for 1 exchange, ½ pt. Examples include:

- 1 ounce poultry (white meat, no skin)
- 1 ounce fresh fish
- 1 ounce tuna, canned in water
- 1 ounce fat-free cheese
- 2 egg whites.

The **Lean** meat group includes foods that contain 7 grams of protein and 3 grams of fat (55 calories) for 1 meat exchange, ¾ pt. Examples include:

- 1 ounce poultry (dark meat, no skin)
- 1 ounce fish
- 1 ounce lean pork
- 1 ounce USDA Select or Choice grades of lean beef
- 1 ounce tuna, canned in oil, drained
- 1 ounce 4.5% fat cottage cheese.

The **Medium-Fat** group includes foods that have 7 grams of protein and 5 grams of fat (75 calories), 1 pt. Examples include:

- 1 ounce of ground beef; most cuts of beef, pork, lamb or veal
- 1 ounce of low-fat cheese
- 1 egg .

The **High-Fat** group includes foods with 7 grams of protein and 8 grams of fat (100 calories), 1 ½ pt. This group includes:

- 1 ounce of pork sausage
- 1 ounce of spare ribs
- 1 ounce fried fish
- 1 ounce of regular cheese (American, Swiss etc.)
- 1 ounce of lunch meat
- 1 ounce frankfurter or bratwurst.

Fat Group: One fat exchange is equal to 5 grams of fat (45 calories), ½ pt.

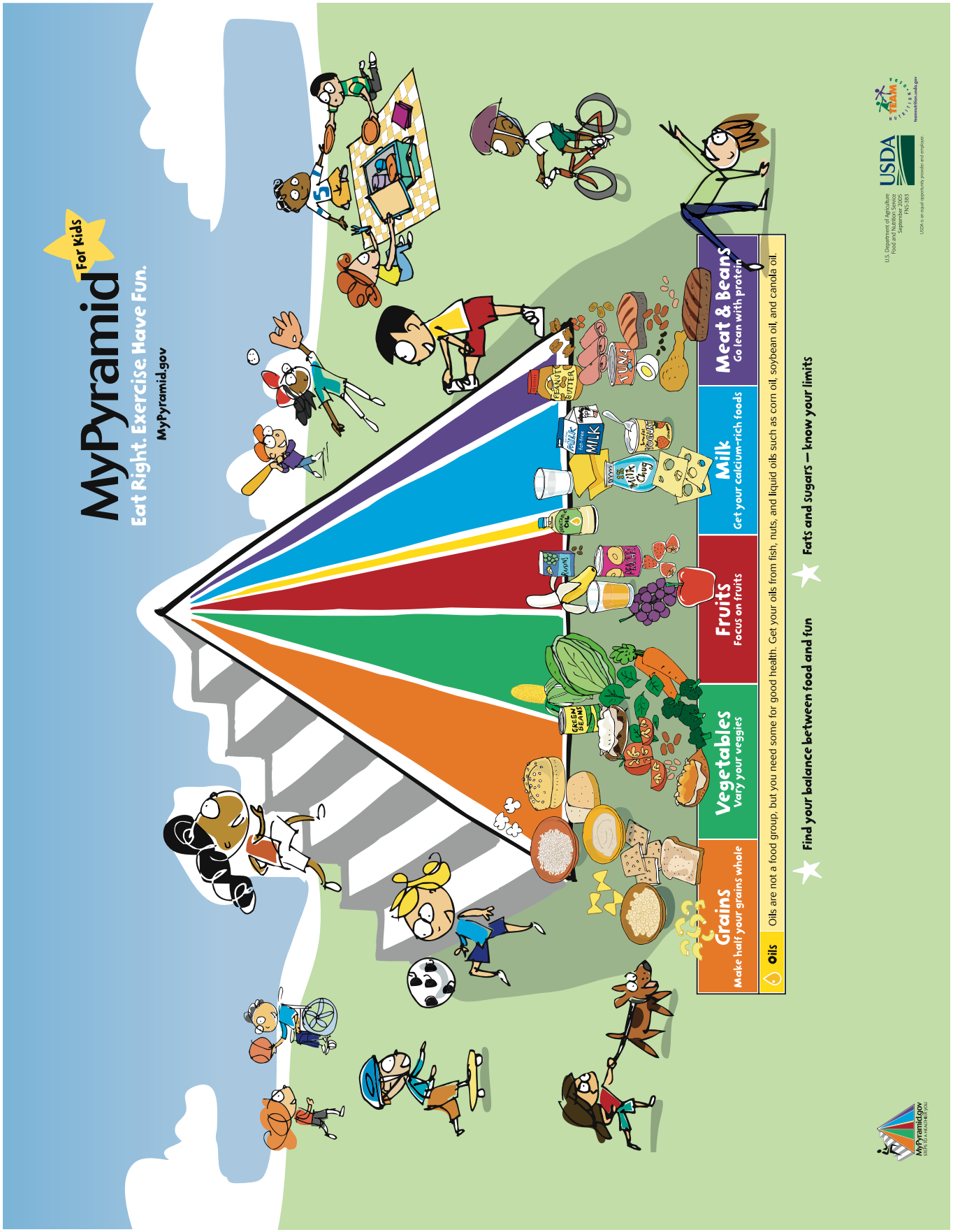
- ½ tbsp peanut butter
- 6 almonds
- 1 teaspoon of oil (olive, peanut, canola)
- 1 teaspoon margarine or butter or vegetable oil
- 1 strip of bacon
- 2 tablespoon of cream (half and half)

Free Foods: A free food contains less than 20 calories or less than 5 grams of carbohydrate per serving. If you eat 3 servings a day or less, you do not need to count these foods. Examples of free foods include sugar-free gelatin, diet soft drinks, catsup, soy sauce, and spices.

Reviewed and updated by Martha Funnell, MS, RN, CDE, Michigan Diabetes Research and Training Center, August 2004.

GENERAL GUIDELINES FOR MAKING FOOD ADJUSTMENTS FOR EXERCISE

TYPE OF EXERCISE AND EXAMPLES	IF BLOOD SUGAR IS:	INCREASE FOOD INTAKE BY:	SUGGESTIONS OF FOOD TO USE:
Exercise of short duration and of low to moderate intensity	less than: 80 mg/dl	10 to 15 grams of carbohydrate per hour of exercise	½ to 1 calorie points; fresh fruit or bread
Examples: walking A half mile or leisure bicycling for less than 30 minutes	80 mg/dl or greater	not necessary to increase food	— — —
Exercise of moderate intensity *Examples:* Tennis, swimming, jogging, gardening, golfing, or vacuuming for one hour	less than: 80 mg/dl	25 to 50 grams of carbohydrate before exercise, then 10 to 15 grams per hour of exercise	1½ to 2½ calorie points; ½ meat sandwich with milk or fresh fruit before exercise THEN ½ to 1 calorie points per hour of exercise fresh fruit or bread
	80 to 170 mg	10 to 15 grams of carbohydrate per hour of exercise	½ to 1 calorie points; fresh fruit or bread
	180 to 300 mg	not necessary to increase food	— — —
	greater than: 300 mg/dl	do not begin exercise until blood sugar is under better control	— — —
Strenuous activity, or high intensity exercise	less than: 80 mg/dl	50 grams of carbohydrate; monitor blood sugar closely	3½ calorie points; 1 meat sandwich with milk and fresh fruit
Examples: Football, hockey, singles racquetball or 1 on 1 basketball; strenuous cycling or swimming, shoveling heavy snow	80 to 170 mg	25 to 50 grams of carbohydrate, depending on the intensity and duration	1½ to 2½ calorie points; ½ meat sandwich with milk or fresh fruit
	180 to 300 mg	10 to 15 grams of carbohydrate per hour of exercise	½ to 1 calorie points; fresh fruit or bread


MyPyramid
For Kids
Eat Right. Exercise. Have Fun.
MyPyramid.gov
Grains
Make half your grains whole
Vegetables
Vary your veggies
Fruits
Focus on fruits
Milk
Get your calcium-rich foods
Meat & Beans
Go lean with protein
Oils
Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.
Find your balance between food and fun
Fats and Sugars – know your limits
MyPyramid.gov
USDA
U.S. Department of Agriculture
Food and Nutrition Service
September 2005
FNS-303
USDA is an equal opportunity provider and employer.

Tips for Families

Eat Right

1 **Make half your grains whole.** Choose whole-grain foods, such as whole-wheat bread, oatmeal, brown rice, and lowfat popcorn, more often.

2 **Vary your veggies.** Go dark green and orange with your vegetables—eat spinach, broccoli, carrots, and sweet potatoes.

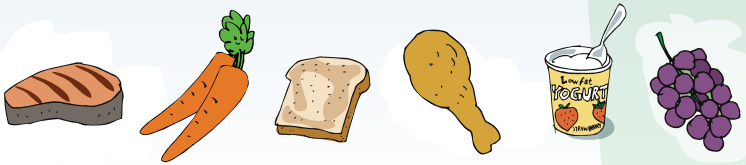
3 **Focus on fruits.** Eat them at meals, and at snack time, too. Choose fresh, frozen, canned, or dried, and go easy on the fruit juice.

4 **Get your calcium-rich foods.** To build strong bones serve lowfat and fat-free milk and other milk products several times a day.

5 **Go lean with protein.** Eat lean or lowfat meat, chicken, turkey, and fish. Also, change your tune with more dry beans and peas. Add chick peas, nuts, or seeds to a salad; pinto beans to a burrito; or kidney beans to soup.

6 **Change your oil.** We all need oil. Get yours from fish, nuts, and liquid oils such as corn, soybean, canola, and olive oil.

7 **Don't sugarcoat it.** Choose foods and beverages that do not have sugar and caloric sweeteners as one of the first ingredients. Added sugars contribute calories with few, if any, nutrients.



Exercise

1 **Set a good example.** Be active and get your family to join you. Have fun together. Play with the kids or pets. Go for a walk, tumble in the leaves, or play catch.

2 **Take the President's Challenge as a family.** Track your individual physical activities together and earn awards for active lifestyles at *www.presidentschallenge.org*.

3 **Establish a routine.** Set aside time each day as activity time—walk, jog, skate, cycle, or swim. Adults need at least 30 minutes of physical activity most days of the week; children 60 minutes everyday or most days.

4 **Have an activity party.** Make the next birthday party centered on physical activity. Try backyard Olympics, or relay races. Have a bowling or skating party.

5 **Set up a home gym.** Use household items, such as canned foods, as weights. Stairs can substitute for stair machines.

6 **Move it!** Instead of sitting through TV commercials, get up and move. When you talk on the phone, lift weights or walk around. Remember to limit TV watching and computer time.

7 **Give activity gifts.** Give gifts that encourage physical activity—active games or sporting equipment.

HAVE FUN!

DIABETES INFORMATION FOR THE CAMP PHYSICIAN

Session: _____

Joslin Diabetes Center—Summer Camp, 2006

Cabin: _____

Please answer all questions completely. (INCOMPLETE FORMS will be returned.)

Name:_____ DOB:_____ Date of diabetes diagnosis: _____

Endocrinologist Name:_____ Phone Number ( ) _____

Pediatrician Name: _____ Phone Number ( ) _____

Has he/she ever been seen at the Joslin Clinic? Yes_____ No _____

INSULIN DOSE: (please circle)

Does applicant give own injections? YES_____ NO_____

Type(s): ____ Novolog ____Humalog ____Regular
____Lente ____NPH ____Ultralente
____Lantus (glargine)

Brand: _____Lilly _____NovoNordisk (Novolin)
_____Aventis _____ Other

Species: ____Human ____Pork ____Beef/Pork

Dose Before Breakfast:_____

Dose Before Lunch:_____

Dose Before Supper:_____

Dose Before Bedtime:_____

Are supplemental injections of insulin frequently given? Yes____ No____

If yes, when and why are they given? _____

_____

Pump Users:____Disetronic ____Minimed
____Animas ____Deltec ____Other

Basal (Rates/Hours) #1 _____
#2 _____
#3 _____
#4 _____

Bolus (units/gm carbs) _____

Supplemental ("sensitivity factor")
_____

Does Camper know how to: (please circle)
Change Sites? YES or NO
Supplement? YES or NO
Count Carbohydrates? YES or NO
Bolus for Carbohydrates? YES or NO

Other Medication for diabetes:_____ Dose/Frequency:_____

Any other medical conditions:_____

Hypoglycemia **UN**awareness? Yes____ No____ Severe hypoglycemia reactions? Yes____ No____

Signs of low blood sugar:_____

Date of last occurrence:_____ Ketoacidosis (most recent date):_____

Do you follow a prescribed meal plan? Yes____ No_____ If yes, please provide the following:

Indicate total number of calories: _____ number of meals _____ number of snacks _____

Indicate total number of carbohydrates: _____ breakfast carbs _____ lunch carbs _____ dinner carbs _____ snack carbs _____

Is food Measured? _____ Weighed? _____ Estimated? _____

How active is your child? _____ Very Active _____ Somewhat Active _____ Generally Inactive

APPLICANT OR PARENT/GUARDIAN SIGNATURE_____DATE_____
(*If applicant is under 18 years of age, parent/guardian must sign.*)
RETURN COMPLETED FORM TO: Camp Joslin, Joslin Diabetes Center, One Joslin Place, Boston, MA 02215

IMPORTANT!!! ***Please notify the camp office if your child is exposed to any communicable diseases during the three weeks prior to camp attendance.***

Chart H

INSULIN REACTION

(Hypoglycemia, "Insulin Shock," Low Blood Sugar)

MILD

Blood sugar 60 mg± down to low 40's

SYMPTOMS:
- irritable
- trembly
- weak
- shaky
- hungry

TREATMENT:

Food (general snack)
- ½-1 calorie point in skim milk or a snack with carbohydrate & protein
- Rest/ wait 10-15 minutes
- Recheck your blood sugar
- Repeat food if needed

Examples: Carbohydrate/protein
2 Tbs raisins and peanuts
2 peanut butter/ cracker sandwiches
6 pocket pretzels

Examples: Carbohydrate 1 point
Graham crackers (3 squares)
Saltine crackers (6 squares)
Apple or Orange
1 Cup skim milk

Examples: Protein 1 point
Peanut Butter (2 teaspoons)
Peanuts (2 tablespoons)

MODERATE

Blood sugar 40 mg± down to low 20's

SYMPTOMS:
- skin cold & clammy to the touch
- pale face
- shallow, fast respiration
- drowsy

TREATMENT:
- Simple sugar 40-60 calories (=10-15 gms)
- Rest, wait 10-15 minutes
- Recheck blood sugar
- Repeat simple sugar if BS not >60 (recheck)
- 1-1½ point snack of carbohydrates and protein after blood sugar >60
- For decreased level of conciousness, give Glucagon 1 mg IM & 1 calorie point.

Examples: Simple Sugar (1 dose)
3-4 glucose tablets
15 gm of glucose gel
2-3 teasppons honey
2-3 teaspoons sugar
15 gm tube cake frosting
½ cup regular pop (½ of 12 oz can)
½ cup grape juice

SEVERE

Blood sugar usually less than 20 mg

SYMPTOMS:
- unconscious
- possible convulsions (seizures)
- danger of swallowing incorrectly

TREATMENT:
- Position on side to aid breathing and keep airway open
- Call 911 and/or give Glucagon emergency injection
- When person is alert enough to swallow - give regular 7-up.
- When blood sugar is >60 and person able to eat, give food with carbohydrate and protein.
- Call doctor

CAUSES OF INSULIN REACTION:
- Unusual physical exertion or exercise without increasing food or decreasing insulin.
- An overdose of insulin or pills due to a mistake in measuring.
- Mistake in the meal plan.
- Failure to reduce insulin after an infection.
- Poor usuage of meal due to vomiting or diarrhea.
- Delay in eating a meal or snack.

INSTRUCTIONS FOR TREATMENT OF INSULIN REACTIONS BY THE USE OF GLUCAGON

Person's name: _____

Parents' or Spouse's name: _____

Phones: Home_____ Business_____Other _____

Description: Glucagon is a protein hormone produced in the body by specialized cells of the pancreas. Glucagon and insulin have opposite effects: insulin lowers blood sugar; glucagon raises blood sugar.

The prescription drug is prepared commercially from animal pancreases and is available as:

- An emergency kit: one vial containing the purified glucagons in dry powder form and a syringe pre-filled with a diluting solution.
- A two-bottle package: one bottle containing the purified glucagons in dry powder form and the other containing a diluting solution.

Action: Glucagon causes an increase in blood glucose concentration and is, therefore, used in the treatment of hypoglycemic states (low blood sugar) known as insulin reaction or insulin shock. Glucagon acts by changing stored sugar in the liver (glycogen) to a usable form of sugar (glucose).

Indication: Glucagon is useful in counteracting sever hypoglycemic reactions in people with diabetes who are unable to take food or drink by mouth. After the onset of a reaction, the sooner glucagon is administered, the greater the likelihood of its being effective.

Adverse Reactions: Glucagon is relatively free of undesirable side effects, except for occasional upset stomach, nausea, and vomiting. Also, generalized allergic reactions have been reported. There is no danger of overdosing with glucagon.

- Glucagon is an emergency drug to be used under the direction of a physician. Become familiar with the following instructions before the emergency arises.
- In case of insulin shock or severe insulin reaction, administer glucagon and call a physician or designated health care professional promptly.
- Act quickly. Unconsciousness over a period of time may be very harmful.
- Inject glucagon in the same way that insulin is injected. Turn patient to one side or face down. Rest face on arms.
- The patient usually awakens within 15 minutes. Feed the patient as soon as they awaken and are able to swallow clear liquids containing sugar until nausea subsides.
- Glucagon is a safe drug. There is no danger of overdose. General recommendations are ¼ mg for children 3 or younger, ½ mg for children 3-5, and 1 mg for children over 5 years of age.

NOTE: Glucagon should not be prepared for injection until the emergency arises.

Allergies/Warnings: _____

CAMP INSULIN LOG

Name _____ Cabin/Session_____/_____ Date of Diagnosis_____
Age _____ Weight_____ Target # (D) _____ (N) _____
Home Dose: (B)_____(L)_____(D)_____(HS)_____
Fast Acting: Novo - H - R Inter./Long Acting: NPH – Levemir – Lantus (Time given): _____ Meal Plan # ____

DATE	BLOOD SUGAR/KETONES						INSULIN ORDER			INSULIN GIVEN			
	12	2	B	L	D	HS	Time	Dose	MD	Time	Dose	Site	Staff Initials
							B						
							L						
Reactions/comments							D						
							HS						
							B						
							L						
Reactions/comments							D						
							HS						
							B						
							L						
Reactions/comments							D						
							HS						
							B						
							L						
Reactions/comments							D						
							HS						
							B						
							L						
Reactions/comments							D						
							HS						
							B						
							L						
Reactions/comments							D						
							HS						

Staff Initials/Signatures: ____ _____ _____ _____ _____ _____

Allergies/Warnings:_____

Camp Pump Flow Sheet

Name: _____ Weight:_____ Age:_____ DOD_____ CHO/Insulin Ratio:_____
Pump Brand: _____ Cabin/Session: _____ Correct to: (D)_____
(N)_____
Insulin Brand: _____ Meal Plan #: _____Correction Factor: (D)___:___ (N)___:___

Date		12a	2a	4a	6a	7a	8a	9a	10a	11a	12p	1p	2p	3p	4p	5p	6p	7p	8p	9p	10p	11p
	Glucose																					
	Ketones																					
	CHO (g)																					
	Meal Bolus																					
	Correction Bolus																					
	Basal Rate																					
	New Basal Rate																					
	Site △																					
	Initials																					

Doctor's Orders:
Basal Change:1. (time)_____(basal)_____ 4. (time)_____(basal)_____ ***TDD_____(basal)_____bolus_____**
2. (time)_____(basal)_____ 5. (time)_____(basal)_____ CHO/Ratio Change:_____
3. (time)_____(basal)_____ 6. (time)_____(basal)_____ CF Change:_____
Doctor's Initials_____ Time_____ Comments:
Staff's Initials_____ Time_____

Date		12a	2a	4a	6a	7a	8a	9a	10a	11a	12p	1p	2p	3p	4p	5p	6p	7p	8p	9p	10p	11p
	Glucose																					
	Ketones																					
	CHO (g)																					
	Meal Bolus																					
	Correction Bolus																					
	Basal Rate																					
	New Basal Rate																					
	Site △																					
	Initials																					

Doctor's Orders:
Basal Change:1. (time)_____(basal)_____ 4. (time)_____(basal)_____ ***TDD_____(basal)_____bolus_____**
2. (time)_____(basal)_____ 5. (time)_____(basal)_____ CHO/Ratio Change:_____
3. (time)_____(basal)_____ 6. (time)_____(basal)_____ CF Change:_____
Doctor's Initials_____ Time_____ Comments:
Staff's Initials_____ Time_____

Date		12a	2a	4a	6a	7a	8a	9a	10a	11a	12p	1p	2p	3p	4p	5p	6p	7p	8p	9p	10p	11p
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	CHO (g)																					
	Meal Bolus																					
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	Basal Rate																					
	New Basal Rate																					
	Site △																					
	Initials																					

Doctor's Orders:
Basal Change:1. (time)_____(basal)_____ 4. (time)_____(basal)_____ ***TDD_____(basal)_____bolus_____**
2. (time)_____(basal)_____ 5. (time)_____(basal)_____ CHO/Ratio Change:_____
3. (time)_____(basal)_____ 6. (time)_____(basal)_____ CF Change:_____
Doctor's Initials_____ Time_____ Comments:
Staff's Initials_____ Time_____

Initials/Signature: _____ _____ _____ _____ _____

Special thanks to Abbott for its support in producing and printing this handbook. Abbott Diabetes Care, based in Alameda, Calif., is a leader in developing, manufacturing and marketing glucose monitoring systems designed to help patients better manage their diabetes. Abbott Diabetes Care is committed to developing products to reduce the discomfort and inconvenience of blood glucose monitoring and introducing systems that are easier to use, require smaller blood samples and provide faster results. Abbott Diabetes Care supports diabetes camps across the United States through its "Send a Kid to Camp" program, which provides product donations and scholarship funds that make it possible for children and teens newly diagnosed with diabetes, or struggling with the challenges of diabetes, to attend a summer camp for the first time.

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www.diabetescamps.org